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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,829	07/12/2005	Parvinder S Walia	62771A	6140
109 7590 12/14/2007 The Dow Chemical Company Intellectual Property Section P.O. Box 1967 Midland, MI 48641-1967			EXAMINER ASINOVSKY, OLGA	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 12/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,829

Applicant(s)

WALIA ET AL.

Examiner

Olga Asinovsky

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 17, 20-22 and 25-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-16, 18, 19, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 6-8, 17, 20-22 and 25-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 09/19/2007.

No new Rule (of Nov. 01, 2007) is applying to the present case at the present time.

Claim Rejections - 35 USC § 112

2. Claims 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 2, the phrase "can be described" should be replaced with –is described–.

In claim 10, line 2 after silane insert comma.

Delete word "delete" between claims 12 and 13.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Feichtinger U.S. Patent 5,929,129.

Feichtinger discloses crosslinked silane-grafted polyolefin, column 6, lines 62-65. A multi-functional vinyl silane selected from the group consisting of vinyl trimethoxy silane (VTMOS) and vinyl triethoxy silane (VTEOS) is readable in the present claims 1 in the formula R-Si-R' and in the present claim 13, column 13, lines 30-36. A hydrolysable trimethoxy group is readable in the present claim 1 for being R' group. The free radical initiator is an organic peroxide, column 7, lines 13 and 21 and column 12, lines 38-48. Feichtinger discloses that in a "preferred embodiment, the **grafting mixture is vinyl trimethoxy silane and alpha, alpha-bis(t-butylperoxy)diisopropyl benzene in a ratio of between 100:1 and 10:1. In a more preferred embodiment, the ratio of silane to peroxide is between 50:1 and 10:1. The most preferred ratio is 20:1,**" column 7, lines 18-24. Reference discloses silane-grafting process in the presence of peroxide compound, subsequent extrusion and moisture-induced cross-linking the resulting composition, column 16, lines 31-33. The polyolefin is melt-blended with a 20:1 mixture of vinyl trimethoxy silane (VTMOS) and dicumyl peroxide, column 16, lines 36-39. The silane cross-linking agent is vinyl trimethoxy silane, which is grafted on to the polymer backbone by the free-radical reaction initiated by organic peroxide compound, column 13, lines 29-32. The crosslinking effect occurs by crosslinking of pendent silane groups in the presence of moisture, preferably in hot water, column 13, lines 33-40.

Feichtinger does not use the claimed phrase wherein "the improvement

comprising using an effective molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction," however, it is reasonably to presume that the claimed improvement issue (molar ratio of silane material to free radical) is readable in Feichtinger invention. Feichtinger discloses the same vinyl trimethoxy silane (VTMOS) and the same vinyl triethoxy silane (VTEOS). To analyze the claimed requirement "molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction" (referring to the present original specification at page 6, lines 24-28), the inventors disclose "it is important for the present invention that the effective molar ratio of silane to alkoxy radical used in the grafting reaction be maintained at 40:1 or higher, more preferably 45:1 or higher, most preferably 50:1 or higher. For example, in the case of LUPEROX™ 101 or its equivalent, the weight ratio of VTMOS to peroxide used in the grafting reaction should be maintained at above 80:1 (which corresponds to 40:1 molar ratio of VTMOS to alkoxy radicals) or higher, more preferably above 100:1." Thus, the weight ratio of VTMOS to peroxide is about 80:1, more preferably above 100:1 in the present invention, referring to the original specification at page 6, lines 24-28. Feichtinger discloses the grafting mixture of VTMOS and peroxide compound in a ratio of between 100:1 and 10:1, column 7, lines 18-24. The claimed "molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction" is readable in the broad ratio in Feichtinger invention. *In re Fitzgerald* et al 619 F.2d 67, 205 USPQ 594 (CCPA 1980). Even, is assuming that the prior art reference does not meet the requirement of 35 U.S.C. 102, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a process

for producing the crosslinked silane grafted polyolefin in the presence of an organic peroxide in Feichtinger invention, wherein the molar ratio of silane material to free radical is controlled for the purposes to improve the crosslinking property and subsequent extruding property, and, thereby, obtain the claimed limitation of effective molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction in the disclosure in Feichtinger invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5, 9-16, 18-19 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al U.S. Patent 6,455,637 in view of Feichtinger U.S. Patent 5,929,129.

7. Jackson discloses a moisture-crosslinkable polypropylene material comprising silane-grafted polyolefin in the presence of organic peroxide free radical initiator. The silane compound having formula $RSiY_3$ is readable in the present claims, column 8, line 37, wherein Y_3 is a hydrolysable group. The amount of silane reacted with polyolefin is from about 0.1 to about 50% by weight based on the total weight of the silane-grafted resin, column 3, lines 57-63. The amount of organic peroxide is from about 0.1 to about 1.0% by weight based on the total silane-grafted resin, column 4, lines 8-11. The crosslinking effect is carried out by moisture exposing at elevated temperature to induce

crosslinking of the silane groups via a combined hydrolysis and condensation reaction, column 5, lines 1-10. The polyolefin, silane and peroxide are pre-blended, than passed through an extruder at a temperature in order to accomplish grafting of the silane onto the polyolefin, column 5, lines 16-21, for the present claim 9. The antioxidant can be present, column 6, Table 1.

8. Feichtinger has been discussed in the paragraph 4 above. (The weight ratio of VTMOs to peroxide is about 80:1, more preferably above 100:1 in the present invention referring to the original specification at page 6, lines 24-28.) Feichtinger discloses the grafting mixture of VTMOs and peroxide compound in a ratio of between 100:1 and 10:1, column 7, lines 18-24; (referring to the present specification at page 6, lines 24-28, it corresponds to 40:1 molar ratio of VTMOs to alkoxy radicals or higher). The claimed "molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction" is readable in the broad ratio in Feichtinger invention. The grafting process can be produced by mixing the polymer in granulated form with a mixture of silane and peroxide, column 5, lines 43-45.

9. Jackson discloses a broad ratio of silane compound to the initiator in the range of 50% to 1.0% based on the total weight of the silane-grafted resin. And Jackson does not disclose the melt index of polyolefin after grafting effect and the melt index of the starting polyolefin.

Both references disclose the analogous silane grafted polyolefin in the presence of an organic peroxide.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a process condition for grafting and crosslinking polyolefin in Jackson invention wherein the ratio of silane compound to the free radical is selected as suggested in Feichtinger invention for the purposes to improve grafting effect, crosslinking property and extruding property of the resulting product.

Since the melt index of the polyolefin upon the silane-grafting process is not being the same as to compare with the melt index of the starting polyolefin, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the controlled process condition in Jackson invention by controlling heat, amount of the ingredients, moisture and degree of the crosslinking reaction with a reasonable expectation such that a melt index after grafting is no lower than 80 % of the melt index of the polyolefin prior to grafting, and it would be routinely optimized by one of ordinary skill in the art in practicing the invention disclosed by cited reference.

10. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brann et al U.S. Patent 5,741,858 in view of Feichtinger U.S. Patent 5,929,129.

Brann discloses silane-crosslinkable elastomer-polyolefin polymer. A process includes step of grafting a silane compound onto the polyolefin in the presence of organic initiator. A vinyl hydrolysable silane compound is vinyl trimethoxy silane (VTMOS), that is readable in the present claim. An organic peroxide is dicumyl peroxide, column 12,

lines 46-49. The ratio of silane crosslinker to initiator is between 10:1 to 30:1, column 8, lines 15-16.

The difference with the present claim 1 is the requirement of the molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction.

Feichtinger has been discussed in the paragraph 4 above. Feichtinger discloses a mixture of VTMOs and organic peroxide compound in the wide ratio of 100:1 to 10:1, column 7, lines 18-24, (referring to the present specification at page 6, lines 24-28, it corresponds to 40:1 molar ratio of VTMOs to alkoxy radicals or higher).

Both references disclose the analogous silane-grafted polyolefin and crosslinked by exposure to moisture.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a process for producing the crosslinked silane grafted polyolefin in the presence of an organic peroxide in Feichtinger invention in to Brann invention wherein the molar ratio of silane material to free radical is selected in the claimed limitation for the purposes to improve the crosslinking property and elasticity property of the resulting grafted polyolefin in Brann invention.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References have been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

December 01, 2007
December 06, 2007
December 10, 2007

Olga Asinovsky
Examiner
Art Unit 1796



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